

**HOST POTENTIAL OF SOME CULTIVATED LEGUMES FOR THE  
PEA LEAF WEEVIL, *SITONA LINEATUS* (LINNAEUS)  
(COLEOPTERA: CURCULIONIDAE)<sup>1</sup>**

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Since the initial discovery of the pea leaf weevil, *Sitona lineatus* (Linnaeus), in North America near Vancouver, B.C., in 1936, the insect, which is primarily a pest of dry and green peas, has spread throughout the pea growing regions of southern British Columbia, Oregon, Washington, and northern Idaho (Downes, 1938; Anon., 1971). In Europe its primary host plants are broadbeans (*Vicia faba*), peas (*Pisum sativum*), lentils (*Lens esculenta*) and sweetclover (*Melilotus officinalis*) (Jackson, 1920; Melamed-Madjar, 1966; and Sedivy, 1972). In the Pacific Coastal region of North America, peas and vetch have been listed as host plants (Prescott and Reehner 1961), and sweetclover has been shown to be an acceptable host plant (Fisher 1977) as it is in Finland (Markkula 1959). Spread of the weevil eastward will depend on its ability to use legumes other than peas as hosts since peas are not grown to any extent between northern Idaho and Minnesota. The purpose of this study was to determine whether cultivated legumes other than peas or sweetclover could be used as host plants for the pea leaf weevil.

**Methods and Materials**

*1975 experiment.*—In the spring at the University of Idaho Plant Science Farm, Moscow, Idaho, 3 × 6 m cages were placed over tings (1 cage/planting) of alfalfa (*Medicago sativa*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), cv. Alaska spring peas, cv. Austrian winter peas and broadbeans. The perennials had been seeded the previous season and the annuals were seeded May 5, 1975. Overwintering adult weevil populations in the perennials were reduced essentially to zero by an early spraying with malathion. On May 27, each cage was uniformly infested with 1000 adult *Sitona lineatus* that had been collected from nearby overwintering sites. Uniformity was achieved by releasing 100 weevils at spaced intervals

Table 1. Average per m<sup>2</sup> (A) and mean per sample (B) of life stages of *Sitona lineatus* found on six caged leguminous crops for the 1975 season and on three leguminous crops on July 19, 1976.

| Crop                 | Eggs |      | Larvae |      | Adults |      |
|----------------------|------|------|--------|------|--------|------|
|                      | A    | B    | A      | B    | A      | B    |
| 1975                 |      |      |        |      |        |      |
| Broadbeans           | 2515 | 17.9 | 107    | 0.76 | 196    | 1.40 |
| Alaska spring peas   | 1433 | 10.2 | 141    | 1.00 | 94     | 0.67 |
| Austrian winter peas | 1391 | 9.9  | 51     | 0.36 | 67     | 0.48 |
| White clover         | 1405 | 10.0 | 63     | 0.45 | 55     | 0.39 |
| Alfalfa              | 1307 | 9.3  | 34     | 0.24 | 38     | 0.27 |
| Red clover           | 1068 | 7.6  | 21     | 0.15 | 30     | 0.21 |
| LSD <sub>0.05</sub>  |      | 2.5  |        | 0.28 |        | 0.35 |
| 1976                 |      |      |        |      |        |      |
| Alaska spring peas   |      |      | 1532   |      | 148    |      |
| Lentils              |      |      | 0      |      | 0      |      |
| Alfalfa              |      |      | 492    |      | 49     |      |

throughout the cage. Each week, weather permitting, three soil-core samples, each 9.5 cm in diam by 15.54 cm high, were taken from each cage. The sampling method and subsequent processing have been described by Fisher (1977). The numbers of eggs, larvae and adults obtained from each sample were recorded for each sampling time.

1976 experiment.—Plantings of alfalfa, lentils and Alaska spring peas were caged as in 1975 at the University of Idaho Plant Science Farm, Moscow, Idaho. Each cage was infested with 5000 adult weevils. Twenty soil-core samples were taken in each cage on July 19, 1976, and processed. The numbers of larvae and adults obtained from each sample were recorded.

Results

1975.—There were statistically significant differences among host plants in the number of individuals produced for each life stage (Table 1). Broad-bean was a superior host, and spring peas were intermediate. Winter peas, white clover, alfalfa and red clover were less acceptable as host plants.

1976.—Peas supported a larger population than alfalfa (Table 1). No larvae or adults were found on lentils.

Discussion

The results of this study showed that lentil is not a host for *Sitona lineatus* and that perennial legumes tended to be less acceptable hosts than spring peas or broadbeans.

These observations confirm much of the information presented in the European literature. Hans (1959) found that broadbeans and peas produced nearly three times more adults than alfalfa and nearly four times more adults than red clover. Markkula (1959) and Andersen (1934) observed a ratio of 5:1 for eggs on peas compared with red clover. The situation with lentils provided contradiction with the European literature. Sedivy (1972) found lentils to be a preferred host in Czechoslovakia.

### Literature Cited

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### Footnote

- <sup>1</sup> Contribution of the Idaho Agricultural Experiment Station, Journal Series Number 7866.